

Simpson

INSTRUMENTS THAT STAY ACCURATE

OPERATOR'S MANUAL

**BATTERY TESTER
MODEL 379**

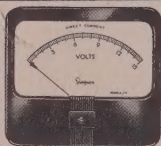
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5200 W. Kinzie St., Chicago, Illinois 60644

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ACCURACY: $\pm 2\%$**



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ADD-A-TESTER ADAPTERS
they will increase the
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**2 1/2" or 3 1/2" ROUND
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**EDGEWISE
ACCURACY: DC $\pm 2\%$
SCALE LENGTH: 1 1/4"**



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MILLIOHMMETER
Model 657\$44.95
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OPERATOR'S MANUAL

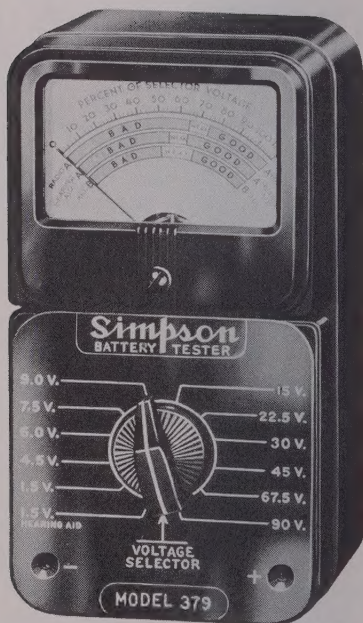
BATTERY TESTER MODEL 379

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Simpson Model 379 Battery Tester
Size: 3"x5-7/8"x2-1/2". Weight 2-1/2 lbs.

OPERATOR'S MANUAL

SIMPSON BATTERY TESTER MODEL 379

CIRCUIT

The Simpson Battery Tester Model 379 provides twelve ranges for batteries with voltage ratings from 1.5 to 90 volts. Each range is loaded to conform to average conditions as recommended by battery manufacturers. The meter dial has three English Reading Scales, each divided into three sections — Good, Weak and Bad. The top colored scale is used for radio A batteries, flashlight cells, etc. The center scale is used for hearing aid A batteries and the lower scale for transistor B and C batteries. In addition to these, a fourth scale which is calibrated in terms of "Percent of Selector Voltage" (0-110 percent) is provided for use in determining the actual battery voltage. The following table shows the load resistance, load current and voltage for the various ranges.

Voltage	Load Resistance	Load Current
1.5 V Hearing Aid	140.6 Ohms	.011 Amps
1.5 V	5.1 Ohms	.30 Amps
4.5 V	78 Ohms	.06 Amps

Voltage	Load Resistance	Load Current
6.0 V	105 Ohms	.06 Amps
7.5 V	132 Ohms	.06 Amps
9.0 V	746 Ohms	.012 Amps
15 V	15,000 Ohms	.001 Amps
22.5 V	22,500 Ohms	.001 Amps
30 V	30,000 Ohms	.001 Amps
45 V	4580 Ohms	.010 Amps
67.5 V	6750 Ohms	.010 Amps
90 V	9010 Ohms	.010 Amps

THE ABOVE RESISTANCE SHOULD BE
WITHIN $\pm 5\%$.

NOTE: The load current is the current through the load resistance plus the current through the meter.

OPERATION

To determine the condition of a battery it is necessary to know the rated voltage of the battery, the type of battery (A or B) and its application (radio, hearing aid, flashlight, etc.). When these factors have been determined, rotate the voltage selector switch to the position which corresponds to the voltage rating of the battery. Two positions are provided for 1.5 volt batteries. One is marked "1.5 V Hearing Aid" and is

used for testing light duty units such as Hearing Aid "A" batteries, penlight cells and mercury cells.* The other is marked 1.5 V and is used for testing heavier units such as Radio "A" batteries, flashlight cells and ignition cells. Plug the black elbow connector into the jack marked - (negative) and the red elbow connector into the jack marked + (positive). Connect the black needle point prod to the negative terminal of the battery and the red prod to the positive terminal. Read the condition of the battery on the scale of the meter which corresponds to the type of battery being tested.

The actual voltage of the battery may be determined by the use of the Percentage Scale if such information is required. This scale is calibrated from zero to 110 percent. 100 percent on the scale corresponds to the voltage indicated by the position of the selector knob. Thus if the selector knob is placed at the 30 V position and a 30 volt potential connected across the test leads the meter will indicate 100 percent, but if the

*Since the voltage versus time characteristic curve of a mercury cell is essentially flat for most of its life, the test reading will only indicate the cell condition at the time of the test and cannot be used as an indication of life expectancy of the cell.

applied potential is 24 volts the meter will read $24/30 \times 100 = 80$ percent. 80 percent of 30 volts is 24 volts.

The actual voltage of the battery can therefore be determined by multiplying the selector setting by the indicated percentage.

The voltage ranges of the Model 379 were selected to accommodate the voltages most commonly used in Radio, Hearing Aid and Industrial service. Occasionally it may be necessary to test batteries with a rated voltage other than those included on the Voltage Selector. The following chart was developed as a quick reference for testing odd values of batteries. This chart is compiled with reference to the PERCENTAGE scale and lists all batteries from 1.5 V to 99 volts in steps of 1.5 volts in addition to the 1.34 volt mercury cell showing both nominal (100%) and "end of life" (70% of nominal) points.

Battery Volts	Tester Range	Nominal	Good Above
1.34 (Mercury)	1.5 H.A.	89	84
1.5	1.5	100	70
3.	4.5	67	47
4.5	4.5	100	70
6.	6.	100	70

Battery Volts	Tester Range	Nominal	Good Above
7.5	7.5	100	70
9.	9.	100	70
10.5	15.	70	49
12.	15.	80	56
13.5	15.	90	63
15.	15.	100	70
16.5	15.	110	77
18.	22.5	80	56
19.5	22.5	87	61
21.	22.5	93	65
22.5	22.5	100	70
24.	22.5	107	75
25.5	30.	85	60
27.	30.	90	63
28.5	30.	95	67
30.	30.	100	70
31.5	30.	105	73
33.	30.	110	77
34.5	45.	77	54
36.	45.	80	56
37.5	45.	83	58
39.	45.	87	61
40.5	45.	90	63
42.	45.	93	65
43.5	45.	97	68
45.	45.	100	70
46.5	45.	103	72
48.	45.	107	75
49.5	45.	110	77

Battery Volts	Tester Range	Nominal	Good Above
51.	67.5	76	53
52.5	67.5	78	54
54.	67.5	80	56
55.5	67.5	82	58
57.	67.5	84	59
58.5	67.5	87	61
60.	67.5	89	62
61.5	67.5	91	64
63.	67.5	93	65
64.5	67.5	96	67
66.	67.5	98	68
67.5	67.5	100	70
69.	67.5	102	72
70.5	67.5	104	73
72.	67.5	107	75
73.5	67.5	109	76
75.	90.	83	58
76.5	90.	85	59
78.	90.	87	61
79.5	90.	88	62
81.	90.	90	63
82.5	90.	92	64
84.	90.	93	65
85.5	90.	95	67
87.	90.	97	68
88.5	90.	98	69
90.	90.	100	70
91.5	90.	102	71
93.	90.	103	72
94.5	90.	105	73

Battery Volts	Tester Range	Nominal	Good Above
96.	90.	107	75
97.5	90.	108	76
99.	90.	110	77

Other nominal values may be calculated from the equation $\text{Nominal Percent} = \frac{\text{Battery Volts}}{\text{Selector Volts}} \times 100$ and the "end of life" point established from $\frac{\text{Battery Volts}}{\text{Selector Volts}} \times K$

"The value" of K for various types of batteries is given below:

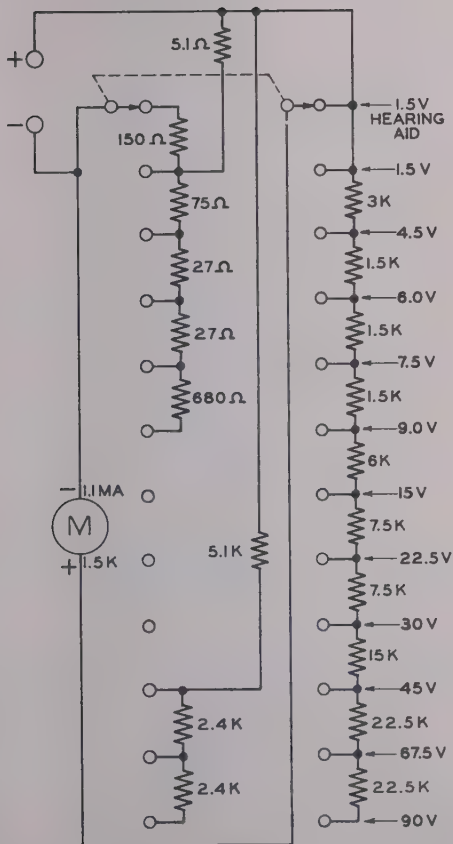
Hearing Aid A batteries	K = 65
All B batteries, Flashlight cells	K = 70
Radio A batteries, Ignition cells	K = 75
Mercury cells	K = 94

EXAMPLE:

A battery consisting of 25 penlight (Hearing Aid "A") cells of 1.5 volts each would have a nominal voltage of 37.5 volts. The lowest range on which this battery could be tested would be the 45 volt range. The nominal percent reading would be $\frac{37.5}{45} \times 100 = 83.5$ percent and the "end of life" reading would be $\frac{37.5}{45} \times 65 = 54.2$ percent. That is, any reading above 54.2 percent would be considered a good battery.

PARTS LIST

Simpson Part No.	Description
1-112750	Function Switch
1-113287	Resistor, 3 K ohms, $\pm 1\%$, $\frac{1}{2}$ w
1-113347	Resistor, 15 K ohms, $\pm 1\%$, $\frac{1}{2}$ w
1-113370	Resistor, 7.5 K ohms, $\pm 1\%$, $\frac{1}{2}$ w
1-118197	Resistor, 5.1 K ohms, $\pm 5\%$, $\frac{1}{2}$ w
1-113648	Resistor, 1.5 K ohms, $\pm 1\%$, $\frac{1}{2}$ w
1-118198	Resistor, 2.4 K ohms, $\pm 5\%$, $\frac{1}{2}$ w
1-113650	Resistor, 6 K ohms, $\pm 1\%$, $\frac{1}{2}$ w
1-113651	Resistor, 22.5 K ohms, $\pm 1\%$, $\frac{1}{2}$ w
1-118196	Resistor, 27 ohms, $\pm 5\%$, $\frac{1}{2}$ w
1-118193	Resistor, 5.1 ohms, $\pm 5\%$, $\frac{1}{2}$ w
1-113927	Resistor, 150 ohms, $\pm 5\%$, $\frac{1}{2}$ w
1-114113	Resistor, 75 ohms, $\pm 5\%$, $\frac{1}{2}$ w
1-117244	Resistor, 680 ohms, $\pm 5\%$, $\frac{1}{2}$ w
3-262871	Knob
0-008381	Test Lead Set



MODEL 379 SCHEMATIC DIAGRAM

SIMPSON WARRANTY REPAIR STATIONS AND PARTS DEPOTS

Arizona, Phoenix 85016 Metercraft Inc. 3308 N. 24th St.	Area Code 602 279-6249
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California, San Diego 92111 Meter Master, Inc. 8139 Engineer Road	Area Code 714 278-2200
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California, Glendale 91201 JSD Engineering Company 6915 San Fernando Road	Area Code 213 849-6187
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California, Los Angeles 90022 Meter Master, Los Angeles Div. of Kierulff Electronics, Inc. 5645 East Washington Blvd.	Area Code 213 685-7313
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California, San Francisco 94105 Pacific Electrical Instrument Lab. 111 Main Street	Area Code 415 421-7185
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Canada, London, Ontario Bach-Simpson Ltd. 1255 Brydges Street P.O. Box 484	Area Code 519 451-9490
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Colorado, Denver 80223 Meter-Master Instrument Service 2145 S. Kalamath Street	Area Code 303 934-4601 934-8614
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Connecticut, New Haven 06511 Kaufman Instrument Labs Inc. 810 Dixwell Avenue	Area Code 203 776-7201
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Florida, Miami 33136 Florida Precision Instrument Corp. 800 N.W. 7th Avenue	Area Code 305 374-1731
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Florida, Orlando 32806 Electro Tech Inc. 307 - 27th Street	Area Code 305 423-5589
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Georgia, Atlanta 30310 Electro-Tech Inc. 690 Murphy Ave. S.W.	Area Code 404 758-7205
Hawaii, Honolulu 96817 Electronic Systems Inc. 1622-26 Silva Street	851-457 811-132
Illinois, Chicago 60625 A & M Instrument, Incorporated 4801 North Ridgeway Avenue	Area Code 312 539-4460
Illinois, Chicago 60644 Pacific Indicator Company 5217 W. Madison Street	Area Code 312 261-1330
Illinois, Chicago 60644 Simpson Electric Company 5200 W. Kinzie Street	Area Code 312 379-1121
Kansas, Shawnee Mission 66205 Sturtz Instrument Co. 4705 Mission	Area Code 913 236-4705
Louisiana, New Orleans 70115 Industrial Instrument Works 3305 Tchoupitoulas Street	Area Code 504 895-5621
Maryland, Baltimore 21211 Edgerly Instrument Lab., Inc. 205 West 28th Street	Area Code 301 243-6611
Massachusetts, Cambridge 02138 A. S. Mancib 363 Walden Street	Area Code 617 864-2494
Massachusetts, Needham Heights 02194 Instruments, Incorporated 570 Hillside Avenue	Area Code 617 444-9410
Michigan, Detroit 48220 Ram Meter, Inc. 1100 Hilton Road Ferndale	Area Code 313 547-1000

Minnesota, Minneapolis 55411 Instrumentation Services Inc. 917 Plymouth Avenue	Area Code 612 521-8803
Missouri, St. Louis 63112 Scherrer Instruments 5449 Delmar Blvd.	Area Code 314 367-9800
New York, Buffalo 14216 Electrical Instrument Labs. 932 Hertel Avenue	Area Code 716 392-2726
N. Y., Great Neck, Long Island 11022 Simpson Instrument Sales & Service, Inc. 130 Gutter Mill Road	Area Code 212 683-0674 Area Code 516 482-3103
New York, Long Island City 11103 A & M Instrument Inc. 48-01 31st Avenue	Area Code 212 726-4343
New York, New York 10011 Electro-Tech Equipment Company 85 Tenth Avenue	Area Code 212 675-2400
New York, Syracuse 13215 Syracuse Instrument Lab. 4895 South Avenue Box 96	Area Code 315 492-1651
New York, Vestal 13850 Compton Industries Inc. 333 Vestal Parkway East P.O. Box 351	Area Code 607 748-3349
North Carolina, Charlotte 28206 Electro-Tech Inc. 3107 Gullman Avenue	Area Code 704 333-0326
Ohio, Cleveland 44135 Weschler Electric Company 4250 W. 130th Street	Area Code 216 251-4609
Ohio, Cleveland 44103 Pioneer-Standard Electronics, Inc. 5403 Prospect Avenue	Area Code 216 432-0010

Ohio, Dayton 45404 SREPCO Electronics Div. of Pioneer Standard Electronic, Inc. 314 Leo Street	Area Code 513 224-0871
Oklahoma, Tulsa 74011 Tri-State Instrument Lab. 3244 East 15th Street, Box 5057	Area Code 918 936-0489
Oregon, Portland 97217 Industrial Instrument Repair Lab. 1910 N. Killingsworth St.	Area Code 503 285-6629
Pennsylvania, Philadelphia 19115 Sunshine Scientific Instrument 1810 Grant Avenue	Area Code 215 673-5600
Texas, Dallas 75204 Ultra Instrument Lab., Inc. 3515 Swiss Avenue, Suite 117	Area Code 214 826-6395 826-6396
Virginia, Falls Church 22046 United Instrument Lab. Inc. 102 W. Jefferson St.	Area Code 703 532-4123
D.C., Washington 20001 Electronic Wholesalers, Inc. 2345 Sherman Avenue N.W.	Area Code 202 483-5200
Washington, Seattle 98119 The Instrument Lab. Inc. 934 Elliott Avenue West	Area Code 206 283-5850
Wisconsin, Milwaukee 53202 Electro-Mechano 261 East Erie Street	Area Code 414 272-4050

WARRANTY

SIMPSON ELECTRIC COMPANY warrants each instrument and other articles of equipment manufactured by it to be free from defects in material and workmanship under normal use and service, its obligation under this warranty being limited to making good at its factory any instrument or other article of equipment which shall within 90 days after delivery of such instrument or other article of equipment to the original purchaser be returned intact to it, or to one of its authorized service stations, with transportation charges prepaid, and which its examination shall disclose to its satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on its part, and SIMPSON ELECTRIC COMPANY neither assumes nor authorizes any other persons to assume for it any other liability in connection with the sale of its products.

This warranty shall not apply to any instrument or other article of equipment which shall have been repaired or altered outside the SIMPSON ELECTRIC COMPANY factory or authorized service stations, nor which has been subject to misuse, negligence or accident, incorrect wiring by others, or installation or use not in accord with instructions furnished by the manufacturer.

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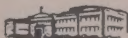
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**Quality is the indispensable component
of every Simpson instrument**